



THE TAME  
CATCHMENT

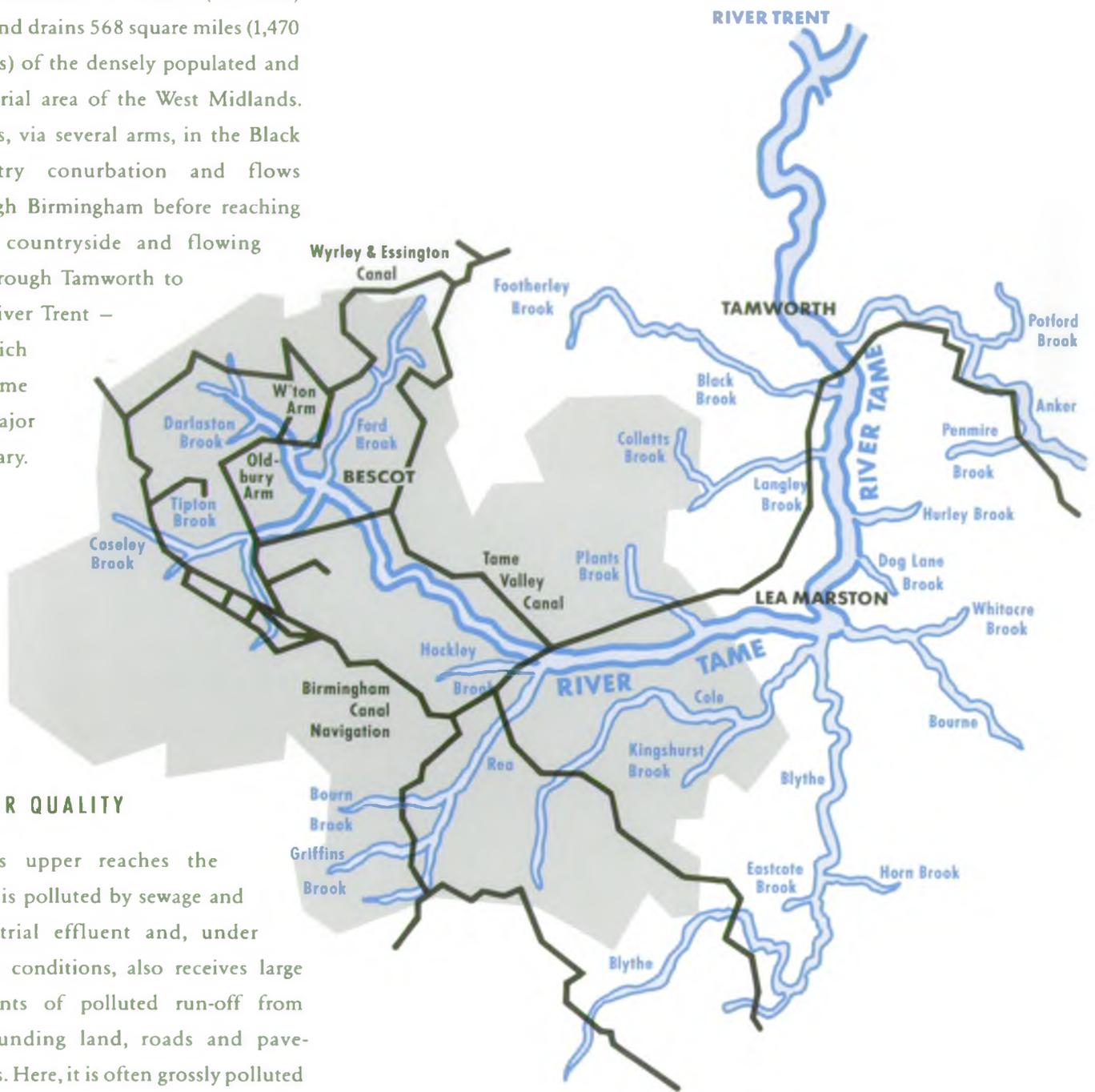
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NRA

*National Rivers Authority*

The River Tame is 55 miles (91.5 kms) long and drains 568 square miles (1,470 sq kms) of the densely populated and industrial area of the West Midlands. It rises, via several arms, in the Black Country conurbation and flows through Birmingham before reaching open countryside and flowing on through Tamworth to the River Trent – of which the Tame is a major tributary.



### WATER QUALITY

In its upper reaches the Tame is polluted by sewage and industrial effluent and, under storm conditions, also receives large amounts of polluted run-off from surrounding land, roads and pavements. Here, it is often grossly polluted – a class 4 river. In its lower reaches the Tame greatly improves and, after treatment in our on-line purification lake system, supports a coarse fishery for the first time in over a century.

**The Oldbury arm** of the Tame is class 4 and rises at Rowley Regis. It immediately receives contaminated groundwater from a former chemical tip as well as effluent from Oldbury sewage works. Tipton Brook is the main tributary of this arm and adds to

the problem since its flow is almost entirely sewage effluent.

**The Wolverhampton arm** of the river is also class 4 and rises in an area of Wolverhampton riddled with old mine workings and therefore suffers from metals contamination. Leachate from areas previously used for disposal of acidic industrial wastes makes the problem worse. The derelict Bentley Mill Lane tip discharges high concentrations of nickel and copper into the

system. In dry weather the river consists almost entirely of sewage effluent.

The closure of sewage works in Wadden Brook and Darlaston Brook have improved the quality in those tributaries, although they are both still polluted, particularly in wet weather. Permanent continuous water quality monitors have been installed on both the Wolverhampton and Oldbury arms, as well as at a number of points downstream, to help us understand the quality problems during storms.

## *The National Rivers Authority*

**At Bescot** the two main arms of the River Tame and the Ford Brook join together. Ford Brook contains sewage effluent and is also class 4, although of better quality than the two main arms of the Tame. Ford Brook is close to achieving its river quality objective of just being able to support fish (class 3). In this area of the Tame, the abandoned Slacky Lane Tip discharges high concentrations of nickel and copper into the river via the Ford Brook.

**Below Bescot** there is a major discharge of sewage effluent into the Tame before it flows past a nature reserve and recreational park at Sandwell Valley which was created as part of flood control improvements. It then enters the northern suburbs of Birmingham and, under the elevated motorway, is joined by the class 3 River Rea. This drains the south-west of the city and is polluted by surface water run-off. The last three miles (5 kms) of the Rea is mainly culverted (boxed-in).

**Between Birmingham and Lea Marston**, the five mile (8 kms) stretch of the Tame receives sewage effluent from Minworth and Coleshill sewage works with an average flow of 123 million gallons (558 million litres) a day.

**Above Lea Marston** the clean rivers Blythe and Bourne join the Tame. However, the Blythe has deteriorated throughout its length in recent years. In its upper reaches the Blythe suffers from agricultural pollution and further downstream receives the effluent from Barston sewage works, via Eastcote Brook. In dry weather up to 35 per cent of the flow downstream of Barston is sewage effluent.

The Blythe and Bourne are both important water supply rivers and are closely monitored – particularly for nitrate. Despite these cleaner rivers, the Tame is still class 4 because up to 90 per cent of the flow can be from effluents. The use of urea for de-icing the motorways also adds to ammonia levels during the winter.

**At Lea Marston** the Tame flows through our purification lake system. This slows down the flow of the river and allows the suspended solids to settle on the bed of the lake. When the river leaves the system it has improved from class 4 to almost class 2.

**At Tamworth**, some six miles (10 kms) downstream, the river is joined by the River Anker which varies in quality from class 1B to class 3 because of Wem Brook and Sketchley Brook (both class 3) and effluent from Nuneaton Sewage works. Both brooks are affected by sewage effluent and the class 2 River Sence, a major tributary, receives minewater and colliery effluent.

Apart from Tamworth sewage works, which has little effect, there are no more major discharges to, or tributaries joining, the Tame before it joins the River Trent. In this 12 miles (20 kms) the Tame is close to achieving its class 2 objective.



## RIVER WATER QUALITY CLASSIFICATION

**Class 1A** Water of high quality suitable for potable supply abstractions and capable of supporting game or other high class fisheries.

**Class 1B** Water of less high quality than the class 1A but usable for substantially the same purpose.

**Class 2** Water suitable for potable supply after advanced treatment and capable of supporting reasonably good coarse fisheries.

**Class 3** Water which is polluted to such an extent that fish are absent or only sporadically present. May be used for low grade industrial abstraction.

**Class 4** Water which is grossly polluted and likely to cause a nuisance.

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Class No .....

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## NITRATES

The Bourne Brook, together with the River Blythe, is used as a water supply river for Nuneaton and Bedworth areas. Due to the high levels of nitrate from agricultural run-off the catchment has been targeted as an area where farmers will be advised by the Ministry of Agriculture, Fisheries and Food on the best ways of managing their land in order to reduce the amount of nitrate draining into the streams.

## LOW FLOWS

We are investigating a number of rivers where problems of reduced flows could be caused by groundwater abstractions. A small rural tributary of the River Tame, the Black Brook, is one of these being looked at with a view to any possible remedial measures which could be taken.

## POLLUTION FROM OLD TIP SITES

Seepages containing high concentrations of heavy metals, mainly copper and nickel, flow into the River Tame system from the area of the former Slacky Lane Tip at Goscote and from contaminated land at Bentley Mill Lane, Darlaston. These seepages account for 30 per cent of the heavy metals in the Tame.

**Slacky Lane.** The metallic seepages drain directly into the Rough Brook. They are thought to result from groundwater contaminated by sludges deposited, in the past, on the tip itself and from the now abandoned premises of a copper refinery sited on land to the west of the tip.

**Bentley Mill Lane.** These seepages are thought to be as a result of acidic minewaters from a number of disused coal workings flushing through contaminated land areas. They affect both the Sneyd Brook and the Wolverhampton arm of the Tame. The contaminated waters come from areas which have been either used for waste disposal or are still active for storage.

The actual source of the metals has not been established with any certainty but is currently the subject of NRA studies which aim to identify any remedial measures necessary to limit the pollution from both sites and so improve the quality of the Tame.

## **GROUNDWATER LEVELS IN BIRMINGHAM**

Rising groundwater levels in Birmingham are causing some concern to property owners. Birmingham's industrial water supply used to be largely dependent on wells and boreholes sunk into the sandstone aquifer below the City. Industrial development significantly lowered water levels in the aquifer, particularly in the 1940's and early 1950's. Many buildings were therefore constructed when water levels were below their foundations. Underground services and tunnels were also built in these dry conditions.

Following the changes in the prevailing industries, abstraction rates from the aquifer are now less than a third of those in the 1960's. They are also less than the natural recharge and leakage from water supply pipelines and sewers into the aquifer, so water levels are rising. In some areas they are as much as 65 feet (20 m) higher than in the 1960's and early 1970's. In the low-lying Aston and Witton areas some flooding of basements and service tunnels has occurred because of the high groundwater levels.

Below waste sites and derelict land, groundwater can become contaminated, and possibly corrosive, as it rises. Pollution can spread from the movement of contaminated groundwater into nearby abstractions and watercourses. The NRA is involved in a study of these problems.





### **FLOOD DEFENCE**

The River Tame improvement scheme was begun in 1979 and was completed in 1991. Over 2,000 homes and businesses have been protected from flooding at a cost of £15 million

(£20 million at today's prices) and 38 separate contracts will have been completed.

Heavy rainfall on the urban area gives particular problems of "flash" flooding. Five flood balancing areas have been constructed to trap these peak flows and approximately 18 miles (28 kms) of river channel improvements done. Modification to many of the 26 road, 8 canal and 14 railway crossings along the route have also been done.

Contracts have ranged in value from £20,000 to £3.5 million. Work at Park Lane, Oldbury was the largest contract and involved building 505 yards (462 m) of 13ft x 6.5ft (4m x 2 m) box culverts. The culverts have been surrounded with a special protection

system because the site is an old chemical tip and the ground is contaminated. This will also reduce the pollution by preventing it from entering the river. Work passed beneath the M5 motorway and a builder's supply company had to be temporarily re-sited because culverts were constructed through the company's yard.

### **SANDWELL VALLEY**

As part of our flood defence works on the River Tame, a permanent lake was created which is used for canoeing, windsurfing and sailing. During storms, the lake provides storage for the flood flows and so helps prevent flooding.

The area was carefully landscaped and planted to provide wildlife habitat which, in co-operation with the RSPB, includes a wetland bird reserve. Just five years after creation it has become a nationally recognised site.

### **TAME PURIFICATION LAKES**

The River Tame flows through the purification lakes at Lea Marston, which have been converted from old gravel pits. This slows the river's flow and allows the polluted sediments to settle out. A dredger is permanently sited on the lake to remove accumulated silt. The mud is pumped to our own on-site treatment works where it goes through cleaning processes before the effluent is returned to the river. Tonnes of rubbish floating down the river are also removed every week.

The area has recently been landscaped and planted, providing a major attraction for wildfowl and other animals.



## FISHERIES

Before the last war the River Tame was fishless and by 1946 the pollution was such that the River Trent was fishless for several miles downstream of the confluence with the Tame. Conditions have improved so much that there is now a coarse fishery on the Tame for the first time in more than a century. The fish population consists mostly of roach, chub and dace.

Below the purification lakes, the fish populations have improved steadily since monitoring began in 1977. However, the status of the fishery is poor when compared with other, "clean" rivers in the Trent catchment which have a greater diversity of species.

Fish have slowly moved up river to 'Spaghetti Junction' and the Sandwell Valley although the existence of the fish population is precarious with fish often dying in storm conditions.

Many of the larger fish in the Tame may have migrated from elsewhere in the catchment. The variation in growth indicates that fish in the lower reaches may have migrated from the River Anker or the River Trent or, during floods, from Kingsbury Water Park near the purification lakes. In the upper reaches the fish mainly come from the River Blythe.

Large numbers of fry have been observed in the margins of the Tame in the middle and lower reaches, indicating that natural recruitment does now occur. Unfortunately, these fish are highly susceptible to pollution as their size prevents them avoiding it whereas larger fish can escape by swimming to unpolluted tributaries.

## CONSERVATION AND RECREATION

The River Tame is of major conservation value to the West Midlands conurbation and provides a prime corridor for conservation and recreation opportunities through the urban areas of Sandwell and Birmingham.

From the outskirts of Birmingham to the confluence with the River Trent, the Tame Valley is of national importance particularly with regard to wildfowl. Our Lea Marston purification lakes provide important habitats for overwintering and breeding birds, as does nearby Kingsbury Water Park. Gravel workings along the valley provide additional areas for wildfowl. We are co-ordinating the production of a conservation management plan for the whole of the Tame Valley corridor.

Along the River Cole we have assisted the City Council with financial and practical help for Project Kingfisher, a major conservation scheme involving the local community. We are also funding the production of a management plan for Project Kingfisher.

Because the Tame's headwaters are set in the Black Country conurbation, the NRA faces a major challenge in protecting the improvements already achieved, as well as making further progress to provide a better environment and amenity for the people of the West Midlands.





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